



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

NOV 18 2015

OFFICE OF
COMPLIANCE AND ENFORCEMENT

Reply to: OCE-101

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

NOTICE OF VIOLATION

Mr. Bob Seal
Power Plant Leader
Idaho Power Co. – Brownlee Power Plant
P.O. Box 70
Boise, Idaho 83707

Re: July 21, 2015, NPDES Compliance Inspection
NPDES Permit Number ID0020907

Dear Mr. Seal:

On July 21, 2015, the Idaho Department of Environmental Quality (IDEQ) inspected the Brownlee Power Plant in Wildhorse, Idaho, on behalf of the United States Environmental Protection Agency (EPA). The purpose of this inspection was to determine the facility's compliance with the requirements of the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES) permit that applies to this site, NPDES Permit Number ID0020907. I would like to express my appreciation for your staff's time and cooperation during the inspection.

During the inspection, the IDEQ inspector evaluated the facility's compliance with its NPDES Permit, Numbered ID0020907. A review of the inspection report and EPA files revealed one violation. These findings are limited to those portions of the site covered during the inspection.

VIOLATION

Analytical Quality Control

Section III of the NPDES Permit states, "The permittee shall submit to the Regional Administrator a summary of the analytical quality control program it proposes to use within 30 days of the effective date of this permit."

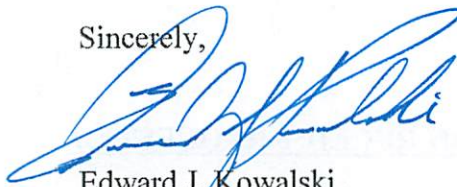
At the time of the inspection, representatives at Brownlee Power Plant were unable to verify whether or not the required summary had ever been submitted and did not have a summary on site available for review by the inspector. Failure to submit the summary of analytical quality control program is a violation of the permit.

Please be advised that although the EPA exercises every precaution to ensure accurate inspection findings, we do not want to dismiss the possibility that the inspectors may have failed to observe areas of noncompliance. Although our goal is to ensure NPDES facilities comply fully with permits, the

ultimate responsibility rests with the facility. The EPA retains all rights to pursue enforcement to address any violations.

If you have any questions concerning this matter, please call Raymond Andrews at (206) 553-4252.

Sincerely,



Edward J. Kowalski
Director

Enclosure

cc: Stephen Berry
Idaho Department of Environmental Quality

Water Compliance Inspection Report

Section A: National Data System Coding (i.e. PCS)

[illegible]

Section B: Facility Data

Name and Location of Facility Inspected (For industrial users discharging to POTW, also include POTW name and NPDES permit number) Idaho Power Co - Brownlee Power Plant Wildhorse, ID 83610	Entry Time/Date 7/21/2015 1:00pm	Permit Effective Date 6/28/1974
	Exit Time/Date 7/21/2015 3:45pm	Permit Expiration Date 3/31/1979 Admin Continued
Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Numbers Bob Seal, Power Plant Leader, 541-785-7344 Paul Walz, Engineer II, 208-388-5866 Neal Lincoln, Operator, 541-785-7343	Other Facility Data (e.g., SIC, NAICS, and other descriptive information) SIC: 4911 (Electric Services) NAISC: 221111 (Hydroelectric Power Gen)	
Name, Address of Responsible Official/Title/Phone and Fax Number Dale Koger, Hydro Production Manager, 208-388-5820 <div style="text-align: right;"> Contacted <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No </div>	(minor)	



Section C: Areas Evaluated During Inspection (Check only those areas evaluated)

<input checked="" type="checkbox"/>	Permit	<input checked="" type="checkbox"/>	Self-Monitoring Program	<input type="checkbox"/>	Pretreatment	<input type="checkbox"/>	MS4
<input checked="" type="checkbox"/>	Records/Reports	<input type="checkbox"/>	Compliance Schedule	<input type="checkbox"/>	Pollution Prevention		
<input checked="" type="checkbox"/>	Facility Site Review	<input type="checkbox"/>	Laboratory	<input type="checkbox"/>	Storm Water		
<input type="checkbox"/>	Effluent/Receiving Waters	<input checked="" type="checkbox"/>	Operations & Maintenance	<input type="checkbox"/>	Combined Sewer Overflow		
<input checked="" type="checkbox"/>	Flow Measurement	<input type="checkbox"/>	Sludge Handling/Disposal	<input type="checkbox"/>	Sanitary Sewer Overflow		

Section D: Summary of Findings/Comments

(Attach additional sheets of narrative and checklists, including Single Event Violation codes, as necessary)

SEV Codes	SEV Description
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>The Brownlee Power Plant is currently owned and operated by Idaho Power; however, a portion of the land is leased from Interior BLM, (see pg 4, para. 5 of report)</p>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Phone and Fax Numbers	Date
Mike Piechowski, P.E. 	IDEQ state Office / 208-373-0274 / 208-373-0143	7/30/2015
A.J. Maupin, P.E. 	IDEQ State Office / 208-373-0167 / 208-373-0576	30-Jul-15

EPA Form 3560-3 (Rev 1-06) Previous editions are obsolete

IDEQ State Office
RECEIVED

Inspection & Enforcement Management Unit
(IEMU)

ICIS.

8-31-2015

J Brown

6

RECEIVED

7. The Board of Directors of the American
 Petroleum Institute has been authorized to
 establish a fund for the purpose of
 providing for the education of
 the children of the employees of the
 American Petroleum Institute who are
 killed or disabled in the line of
 duty. The fund is to be known as the
 American Petroleum Institute Employees'



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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8/17/15 mfg

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippetts, Director

August 13, 2015

Mr. Dale Koger, Manager, Power Production
Idaho Power Company
P.O. Box 70
Boise, Idaho 83702

Subject: Idaho Power Company, Brownlee Power Plant, 2015 NPDES Inspection, NPDES Permit ID-002090-7

Dear Mr. Koger:

As you are aware, the Idaho Department of Environmental Quality (DEQ) conducted an inspection of the Brownlee Power Plant on July 21, 2015. We appreciate your staff's assistance in evaluating this facility's compliance with National Pollution Discharge Elimination System (NPDES) permit ID-002090-7. This permit was issued by the Environmental Protection Agency (EPA) on June 28, 1974, was scheduled to expire on March 31, 1979. The facility had submitted a re-application and the expired permit is administratively continued until a new permit is issued by EPA.

DEQ performed this inspection on behalf of EPA. I want to express my appreciation for the cooperation and assistance provided by your staff during the inspection. My report of the inspection has been completed and submitted to EPA who will make all determinations of permit compliance. If you have any questions, please contact me at (208) 373-0274.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Piechowski".

Mike Piechowski, P.E.
Water Quality Engineer

MJP:slt

C: Maria Lopez, EPA, Lopez.Maria@epamail.epa.gov
AJ Maupin, P.E., DEQ, IPDES Permit Lead
Stephen Berry, DEQ, IPDES CIE Lead
Mary Anne Nelson, Ph. D., DEQ, IPDES Program Manager
Tamarra Golightly, DEQ, State Office
Todd Crutcher, P.E., DEQ, Boise Regional Office, Engineering Manager
TRIM Document #2015AOH134

NPDES
INSPECTION REPORT

HYDROELECTRIC POWER PLANT FACILITY

Brownlee Power Plant

Permit Number: ID-002090-7

INSPECTION DATE: July 21, 2015

REPORT DATE: July 31, 2015

Prepared by
Mike Piechowski, P.E.
Technical Services
Idaho Department of Environmental Quality



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(Unless otherwise noted, all details in this inspection report were obtained from conversations with Mr. Bob Seal, Power Plant Leader, Mr. Paul Walz, Engineer II, and Mr. Neal Lincoln, Operator, all with Idaho Power Company)

1 Facility Information

Facility Name:	Brownlee Power Plant (Facility)
Facility Type:	Hydroelectric Power Plant
Facility Location:	Wildhorse, ID 83610 Latitude: +44.836944 Longitude: -116.897222
Mailing Address:	P.O. Box 70 Boise, ID 83707
Facility Contacts:	Dale Koger, Hydro Production Manager
Facility Numbers:	Ph: (208) 388-5820 (Corporate HQ)
Permit Number:	ID-002090-7
Permit Status:	The current permit became effective June 28, 1974 and expired on March 31, 1979. The permit has been administratively extended.
SIC Code:	4911 (Electric Services)

2 Inspection Information

Inspection Date/Time:	July 21, 2015 1:00 pm to 3:45pm
Inspector:	Mike Piechowski (IDEQ, Boise)
Weather:	Hot, sunny
Purpose:	Evaluate compliance with the NPDES Permit and the Clean Water Act

3 Inspection Entry

This was an announced inspection. Mr. Koger was contacted the week prior to the July 21 inspection date, and arrangements were made with on-site staff at Brownlee for the inspection.

I was accompanied by Mr. Stephen Berry, DEQ IPDES Compliance, Inspection, & Enforcement Lead. We met Mr. Seal, Mr. Walz, Mr. Lincoln and other staff at the Facility at approximately 1:00pm. Mr. Berry and I attended a safety brief presented by the Facility Safety Manager prior to the start of the inspection.

I presented my credentials and discussed the purpose of the visit with Mr. Seal and Mr. Walz prior to the inspection. I was not denied access to the Facility.

We were accompanied throughout the inspection by Mr. Walz and Mr. Lincoln.

4 Inspection Chronology

On July 21, 2015, the inspection began with an entry interview, followed by a file review and tour of the Facility which is located on the Snake River west of the small community of Wildhorse ID. (See Attachment A)

As the Facility no longer treats wastewater prior to discharge, the operation and maintenance (O&M) manual consists primarily of flow measurement manuals. In regards to the permit requirements, an O&M is not specifically required by permit, and I did not review the flow measurement manuals during the inspection. Discharge monitoring reports (DMRs) for the previous year were reviewed. The DMRs are submitted quarterly. Mr. Lincoln is the operator responsible for sample collection and onsite analysis, which consists of flow, temperature, and pH. Mr. Walz is responsible for filling out the DMRs, and Mr. Koger is responsible for signing the DMRs. Mr. Lincoln indicated the highest monthly results were reported on the quarterly submitted DMRs.

At 2:15pm we started touring the Facility. The tour included an inspection of the turbine units, associated non-contact cooling water piping arrangements, sumps and discharge pumping equipment, a review of the sample collection locations, and an inspection of the onsite wastewater disposal system.

The inspection then concluded with an exit interview where I pointed out the areas of concern I observed during the inspection.

We left the Facility at 3:45pm.

5 Owner and Operator Information

The Facility is currently owned and operated by Idaho Power; however, a portion of the land is leased from the US Department of the Interior, Bureau of Land Management.

6 Background

The original 1974 permit authorizes the Facility to discharge through outfalls 001 through 006 to the Snake River. Under the original permit, Outfalls 001 through 004 discharged non-contact cooling water from each of the 4 turbines, outfall 005 discharged sump water

collected by drains throughout the facility, and outfall 006 was originally for the discharge of treated sanitary waste from an on-site wastewater treatment facility.

Over time, the Facility made changes to the plant discharges that affected the outfall numbering and other permit requirements. Most notably:

- In 1980, the Facility added a new turbine (#5) with its own sump and associated non-contact cooling water discharge, for a total of 8 outfalls. The outfalls were renamed at that time, with outfalls 001 through 005 discharging non-contact cooling water, outfalls 006 and 007 discharging sump water, and outfall 008 discharging treated sanitary waste.
- In 2000, the Facility installed an on-site septic system and discontinued use of outfall 008.
- In a 2003 permit Renewal Application, the Facility requested increases to permit limits for flow (both non-contact cooling water and sump discharges) and temperature. DMRs however, continued to show original 1974 permit limits for flow rates (which were increased slightly in 1975) and for temperature.

Based on the April 17, 2003 permit reapplication limits submitted by the Facility, a review of past DMRs indicate the Facility has had no excursions beyond those requested for flow rate (increased to 16 MGD); temperature and pH discharges have continued to meet the original discharge limits established in 1974 (the Facility did request a temperature discharge limit alteration from a fixed 79° F to a floating +10.8° F increase in the Facility influent cooling water temperature.)

Total grease discharged into the water flowing through the turbines was originally estimated to be 10.95 lbs per day in 1980. The amount of grease used has been reduced dramatically in recent years due to better grease formulations and the fact that bearings requiring grease for lubrication are being replaced with greaseless Teflon bushings. The Facility anticipates that all greased bearings will be replaced in 5 to 7 years. Current grease usage is estimated to be three 55-gallon barrels per year according to Mr. Lincoln.

7 Waste Management Process

The Facility's mechanical treatment plant that originally treated sanitary waste prior to discharge was decommissioned in 2000 and was replaced with an on-site septic system approved by Idaho's Southwest District Health Department. Oil skimmers are utilized to remove oil that has seeped into the water collected in the sumps. The sumps are also equipped with oil detection automatic shut-off devices to prohibit accidental discharge of excessive oil.

At the time of inspection, the skimmer units were operational. See Attachment B for photo documentation of an oil skimmer unit.

8 Facility Sample Collection and Analyses

The sample collection and onsite analyses are conducted by several individuals including Mr. Lincoln, and recorded on discharge monitoring bench sheets. Results are recorded as require by permit including dates, location, person performing the analysis, etc.

The parameters analyzed onsite using monitoring equipment include flow, pH, and temperature. Temperature is properly flow-weighted, and pH buffers for calibrating the pH meter were not expired at the time of the inspection.

Permit limit requirements for oil and grease state that "There shall be no discharge for oil and grease in measurable amount" but there are no permit monitoring requirements for oil and grease, and "measurable amount" is not defined in the permit.

See Attachment B for photo documentation of the Facility bench sheets and sample locations.

9 Areas of Concern

This inspection included a review of the treatment system, the sample collection and analyses procedures, and documentation required by the Permit. During the course of this inspection, I observed and identified the following area of concern:

1. Analytical Quality Control—Part III of the Permit specifies that the permittee shall submit a summary of the analytical quality control program. At the time of the inspection, the Facility could not verify if the required summary was ever submitted, and did not have a summary available for review during the inspection.

10 Additional Observations

1. Effluent Limitations and Monitoring Requirements—Part I.A.1.d of the Permit specifies that "There shall be no discharge of oil and grease in measurable amounts." As indicated above, the Facility is proactively reducing the discharge of oil through the use of sump oil skimmers and oil detection shut-off equipment, and is reducing the discharge of grease through the use of Teflon bushings to replace greased bearings.

11 Inspection Sampling

Samples were not collected at the time of this inspection.

Report Completion Date: July 31, 2015

Lead Inspector Signature: 

Mike Piechowski, P.E.

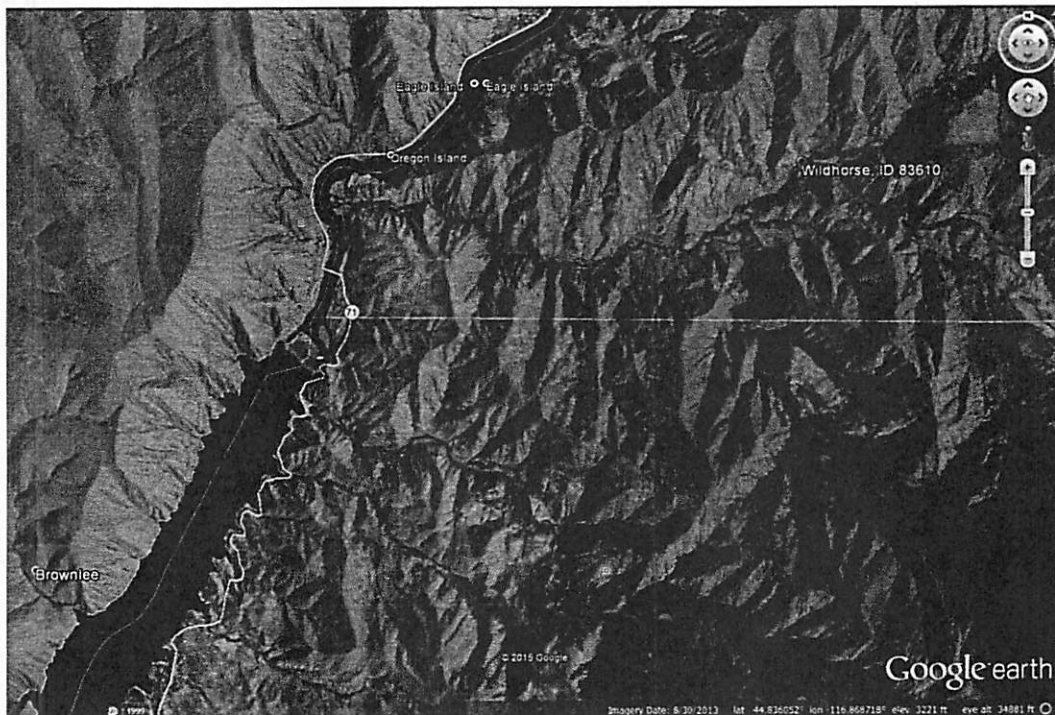
State Office of Technical Services

Idaho Department of Environmental Quality

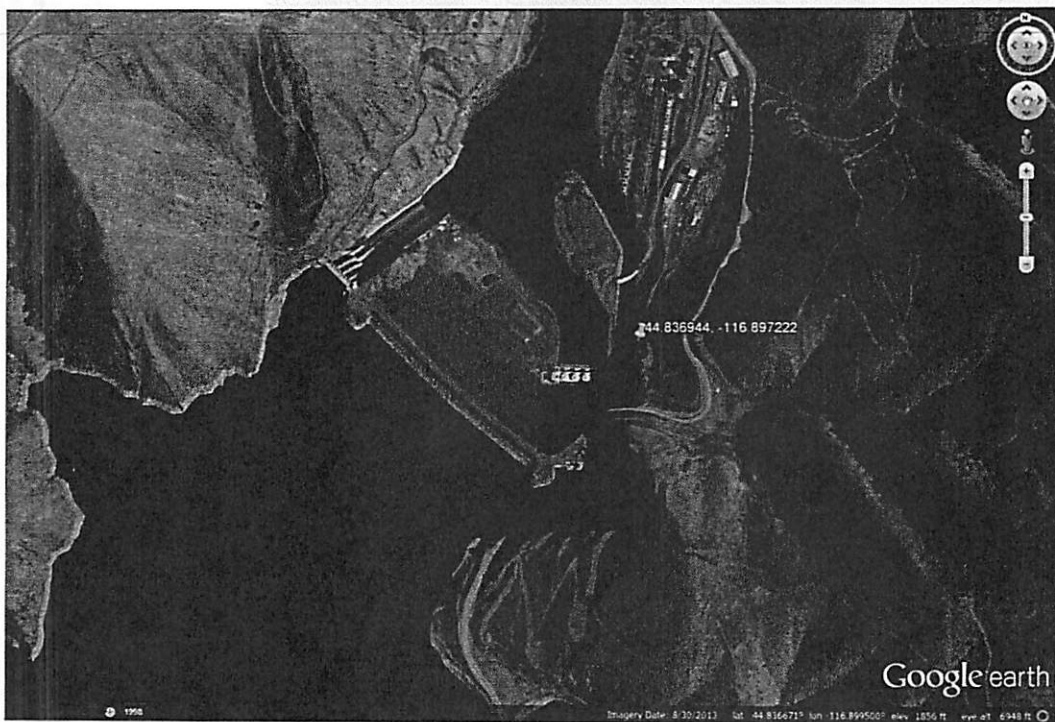
Attachment A—Aerial Photographs

**Idaho Power Company
Brownlee Power Plant**

(July 21, 2015 Inspection)



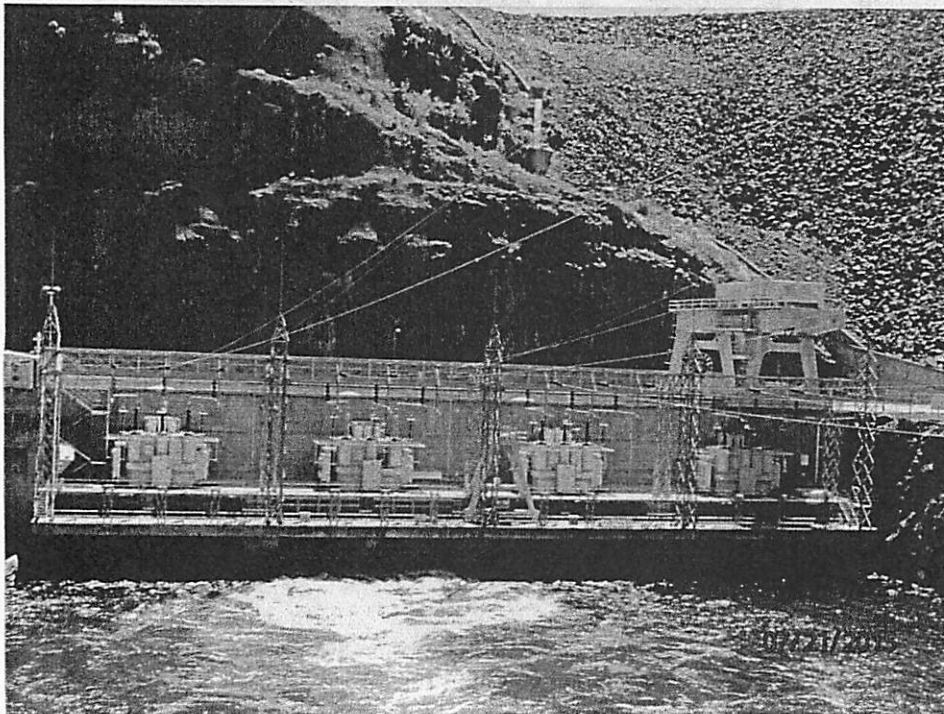
Aerial photograph of the Brownlee Reservoir near Wildhorse ID.



Aerial photograph of Brownlee Dam on the Snake River showing turbines 1-4, turbine 5 is in shadow east of turbines 1-4.



Overlook photograph of Brownlee Dam showing turbines 1-4.



Parking area photograph of Brownlee Dam showing turbines 1-4. Turbine 5 is to left.

Attachment B—Photograph Documentation

**Idaho Power Company
Brownlee Power Plant**

(July 21, 2015 Inspection)

Photographic Documentation

Name of Facility: Idaho Power Brownlee Power Plant

Inspector(s): Mike Piechowski

Inspection Date: Tuesday, July 21, 2015

Purpose of Inspection: NPDES Compliance Inspection



Publish Date: Wednesday 31 July 2015

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**BROWNLEE H.E. DEVELOPMENT
WASTE WATER DISCHARGE DATA**
TO BE COMPLETED MONTHLY
FILL IN THE SHADED CELLS ONLY

07/21/2015

NONCONTACT COOLING WATER									
GENERATOR AIR COOLERS					TURBINE BEARING COOLERS				
LOCATION	UNIT	FLOW	TEMPERATURE - °F	TEMPERATURE - °F	LOCATION	UNIT	FLOW	TEMPERATURE - °F	TEMPERATURE - °F
UNIT NO.	NO.	GPM	IN	OUT	UNIT NO.	NO.	GPM	IN	OUT
COOL	1	1440	75	85	COOL	1	1440	75	85
COOL	2	1440	75	85	COOL	2	1440	75	85
COOL	3	1440	75	85	COOL	3	1440	75	85
COOL	4	1440	75	85	COOL	4	1440	75	85
COOL	5	1440	75	85	COOL	5	1440	75	85

TOTAL FLOW: 6,996 GPM 6996 X 1.440 = 10,077.120 Gallons per Day
WEIGHTED AVERAGE TEMPERATURE: IN: 99.00 °F OUT: 86.29 °F
DATE: 5/14/2015 START TIME: 16:30 FINISH TIME: 16:30
MEASUREMENTS MADE BY: Heath Williamson

OUTFALL SERIAL NO. 896: UNITS 1,2,3, & 4 DRAINAGE SUMP
Note: Average monthly inflow rate is determined by measuring the rise of inflow once per month.
The inflow rate is measured by measuring how long it takes for the sump to rise one vertical foot with the pumps off.
SLUMP SIZE: 10 FT x 6.33 FT x 86.50' 1.0 FT RISE = 7.15 CL
TIME TO RISE ONE VERTICAL FOOT: 5 MINUTES 48 SECONDS = 5.77 MINUTES
INFLOW AT TIME OF MEASUREMENT: 773 GPM 5.77 MINUTES = 123.1 GPM
ESTIMATED AVERAGE DAILY OUTFLOW: 123.1 GPM 1.440 = 177.265 Gallons per Day
SLUMP TEMPERATURE: 58 °F
DATE: 5/14/2015
MEASUREMENTS TAKEN BY: Heath Williamson

OUTFALL SERIAL NO. 897: UNIT NO. 5 DRAINAGE SUMP
Note: Average monthly inflow rate is determined by measuring the rise of inflow once per month.
The inflow rate is measured by measuring how long it takes for the sump to rise one vertical foot with the pumps off.
SLUMP PLAN VIEW SIZE BELOW ELEV 1708.5: 34' x 34' 1.0 FT RISE = 4.15 CL
TIME TO RISE ONE FOOT ABOVE ELEV 1708.5: 8 MINUTES 28 SECONDS = 8.47 MINUTES
INFLOW AT TIME OF MEASUREMENT: 418 GPM 8.47 MINUTES = 61.1 GPM
INFLOW AT TIME OF MEASUREMENT: 1549 GPM 0.00 MINUTES = 40000 GPM
BASIS FOR MONTHLY ESTIMATE: (flow inflow below elev 1708.5 OR above elev 1708.5) 61.1
ESTIMATED DAILY FLOW: 61.1 X 1.440 = 87.984 Gallons per Day
SLUMP TEMPERATURE: 54 °F
DATE: 5/14/2015
MEASUREMENTS TAKEN BY: Heath Williamson

WATER PH MEASUREMENTS		
INTAKE WATER	8.1	UNIT 1 - 4 SUMP: 8.2
TAILRAKE WATER	8.5	UNIT 5 SUMP: 8.7
DRINKING WATER	8.6	
DATE:	5/14/2015	
MEASUREMENTS MADE BY:	Heath Williamson	

MEASUREMENTS TO BE TAKEN ONCE EACH MONTH

Photograph 1: Discharge monitoring bench sheet

**BROWNLEE H.E. DEVELOPMENT
WASTE WATER DISCHARGE DATA**
TO BE COMPLETED MONTHLY
FILL IN THE SHADED CELLS ONLY

07/21/2015

NONCONTACT COOLING WATER									
GENERATOR AIR COOLERS					TURBINE BEARING COOLERS				
LOCATION	UNIT	FLOW	TEMPERATURE - °F	TEMPERATURE - °F	LOCATION	UNIT	FLOW	TEMPERATURE - °F	TEMPERATURE - °F
UNIT NO.	NO.	GPM	IN	OUT	UNIT NO.	NO.	GPM	IN	OUT
COOL	1	1440	75	85	COOL	1	1440	75	85
COOL	2	1440	75	85	COOL	2	1440	75	85
COOL	3	1440	75	85	COOL	3	1440	75	85
COOL	4	1440	75	85	COOL	4	1440	75	85
COOL	5	1440	75	85	COOL	5	1440	75	85

TOTAL FLOW: 6,996 GPM 6996 X 1.440 = 10,077.120 Gallons per Day
WEIGHTED AVERAGE TEMPERATURE: IN: 99.00 °F OUT: 86.29 °F
DATE: 5/14/2015 START TIME: 16:30 FINISH TIME: 16:30
MEASUREMENTS MADE BY: LINCOLN HICKMAN

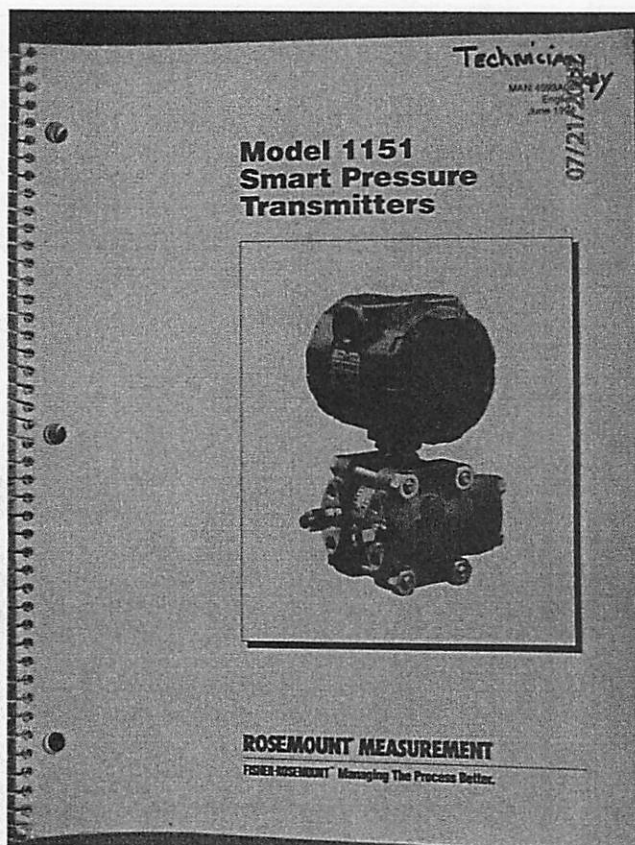
OUTFALL SERIAL NO. 896: UNITS 1,2,3, & 4 DRAINAGE SUMP
Note: Average monthly inflow rate is determined by measuring the rise of inflow once per month.
The inflow rate is measured by measuring how long it takes for the sump to rise one vertical foot with the pumps off.
SLUMP SIZE: 15 FT x 6.33 FT x 86.50' 1.0 FT RISE = 7.15 CL
TIME TO RISE ONE VERTICAL FOOT: 5 MINUTES 48 SECONDS = 5.77 MINUTES
INFLOW AT TIME OF MEASUREMENT: 773 GPM 5.77 MINUTES = 123.1 GPM
ESTIMATED AVERAGE DAILY OUTFLOW: 123.1 GPM 1.440 = 177.265 Gallons per Day
SLUMP TEMPERATURE: 53 °F
DATE: 5/14/2015
MEASUREMENTS TAKEN BY: LINCOLN HICKMAN

OUTFALL SERIAL NO. 897: UNIT NO. 5 DRAINAGE SUMP
Note: Average monthly inflow rate is determined by measuring the rise of inflow once per month.
The inflow rate is measured by measuring how long it takes for the sump to rise one vertical foot with the pumps off.
SLUMP PLAN VIEW SIZE BELOW ELEV 1708.5: 34' x 34' 1.0 FT RISE = 4.15 CL
TIME TO RISE ONE FOOT ABOVE ELEV 1708.5: 8 MINUTES 28 SECONDS = 8.47 MINUTES
INFLOW AT TIME OF MEASUREMENT: 418 GPM 8.47 MINUTES = 61.1 GPM
INFLOW AT TIME OF MEASUREMENT: 1549 GPM 0.00 MINUTES = 40000 GPM
BASIS FOR MONTHLY ESTIMATE: (flow inflow below elev 1708.5 OR above elev 1708.5) 61.1
ESTIMATED DAILY FLOW: 61.1 X 1.440 = 87.984 Gallons per Day
SLUMP TEMPERATURE: 56 °F
DATE: 5/14/2015
MEASUREMENTS TAKEN BY: LINCOLN HICKMAN

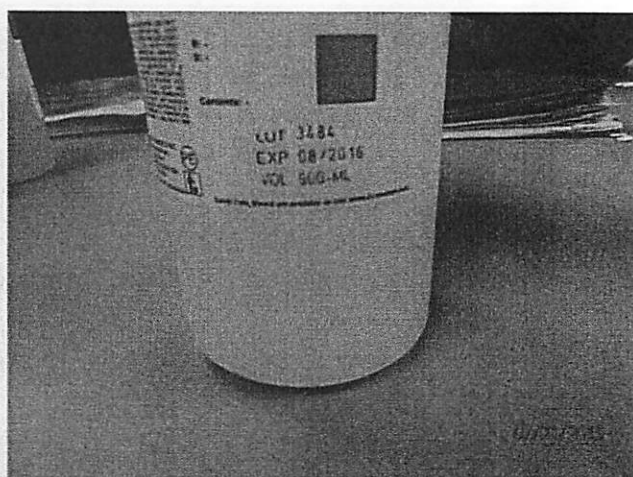
WATER PH MEASUREMENTS		
INTAKE WATER	7.9	UNIT 1 - 4 SUMP: 8.1
TAILRAKE WATER	8	UNIT 5 SUMP: 8.1
DRINKING WATER	NA	
DATE:	5/14/2015	
MEASUREMENTS MADE BY:	LINCOLN HICKMAN	

MEASUREMENTS TO BE TAKEN ONCE EACH MONTH

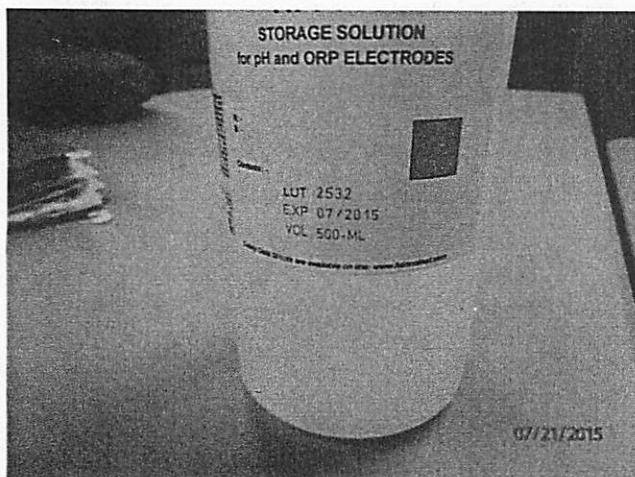
Photograph 2: Discharge monitoring bench sheet



Photograph 3: Pressure transmitter manual for flow measurement



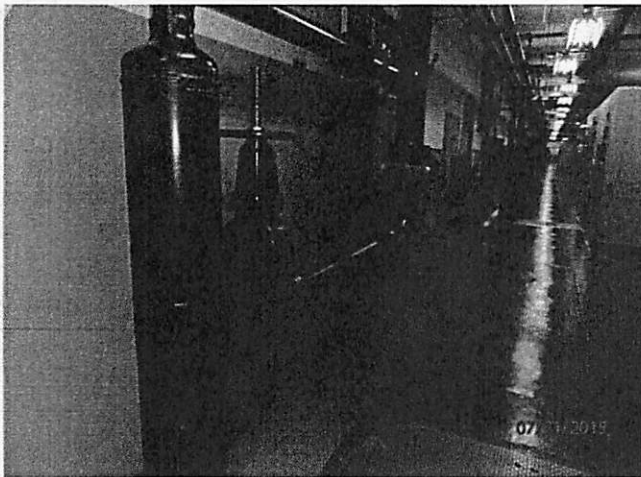
Photograph 4: pH buffer expiration date



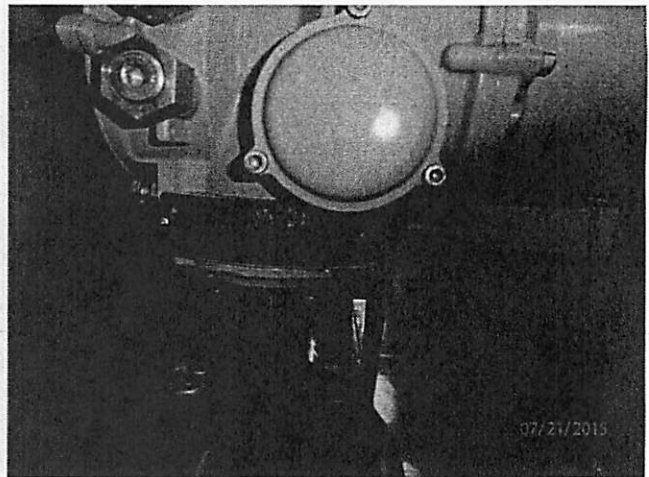
Photograph 5: pH buffer expiration date



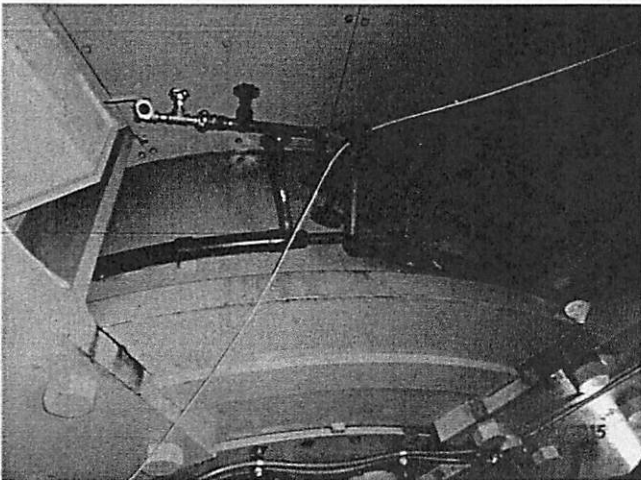
Photograph 6: pH meter



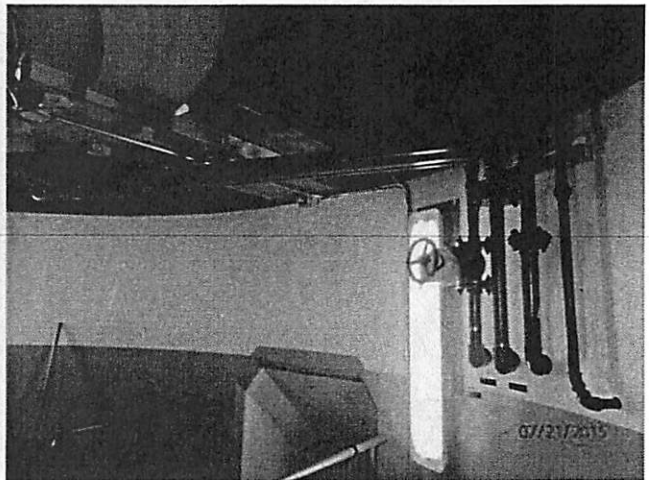
Photograph 7: Non-contact cooling water gallery



Photograph 8: Non-contact cooling water pump



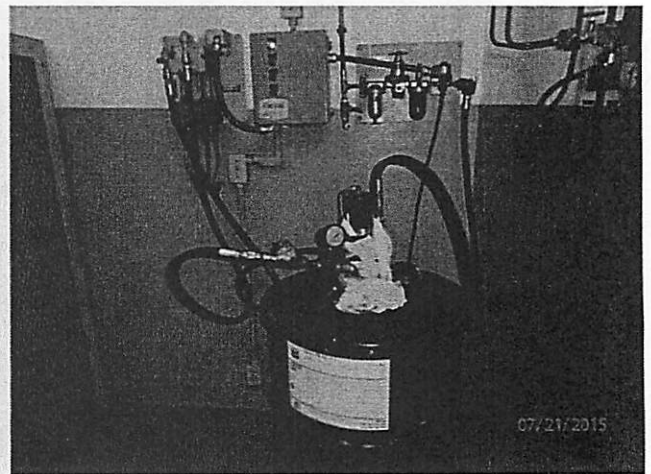
Photograph 9: Non-contact cooling water lines at turbine (typical)



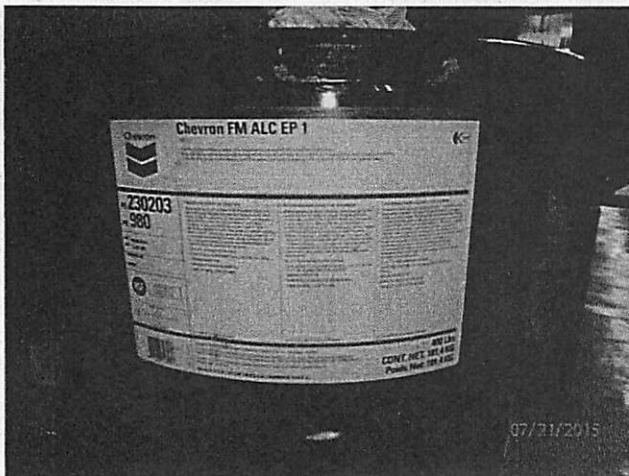
Photograph 10: Non-contact cooling water (blue) and thrust bearing oil (red)



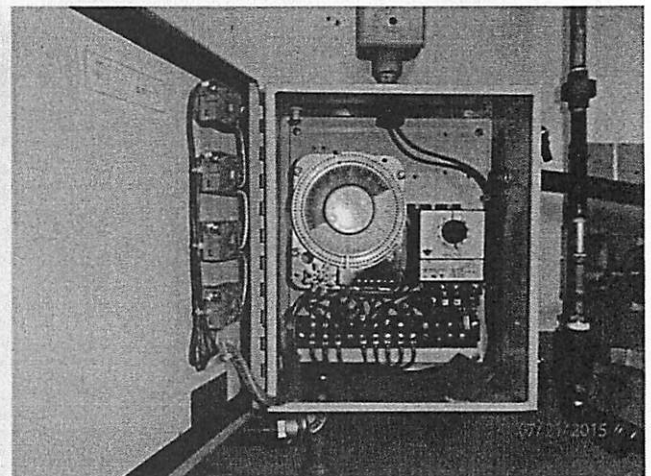
Photograph 11: Grease used for turbine bearings



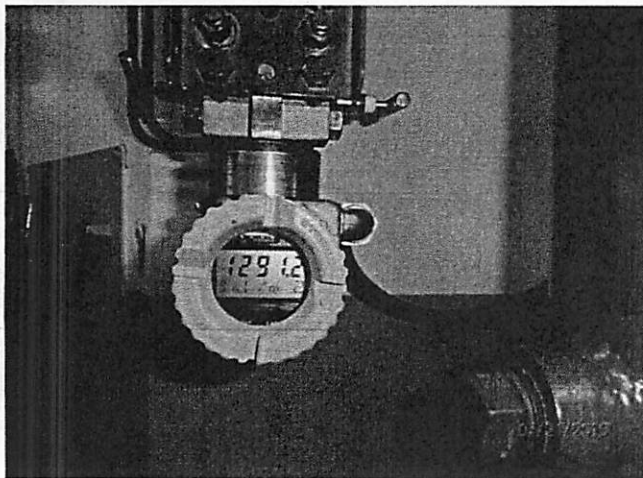
Photograph 12: Grease injection system



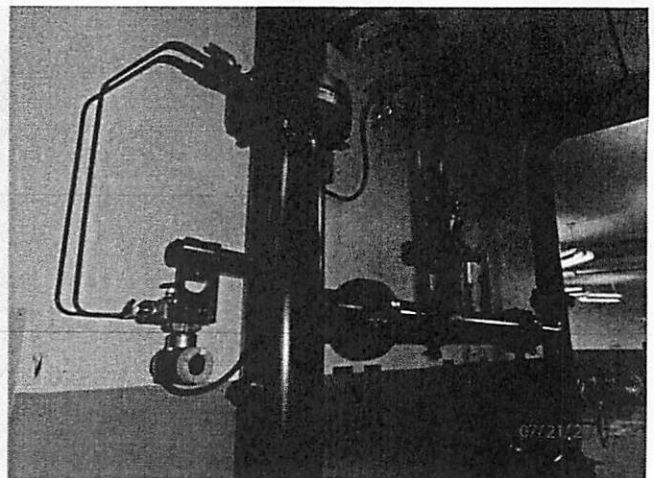
Photograph 13: Grease used for bearings



Photograph 14: Grease injection system timer



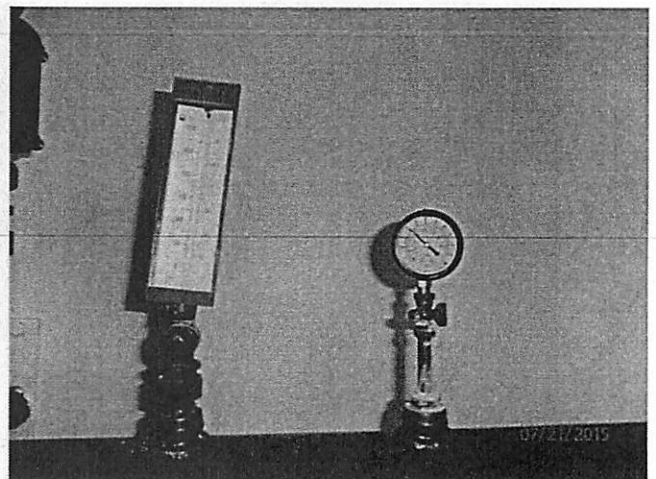
Photograph 15: Differential pressure flow device



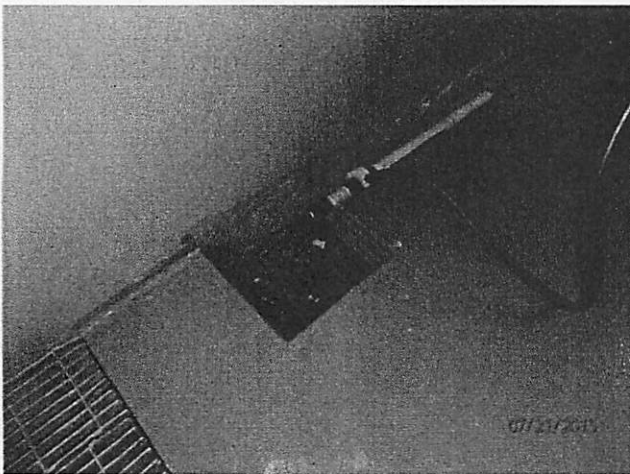
Photograph 16: Non-contact cooling water discharge manifold



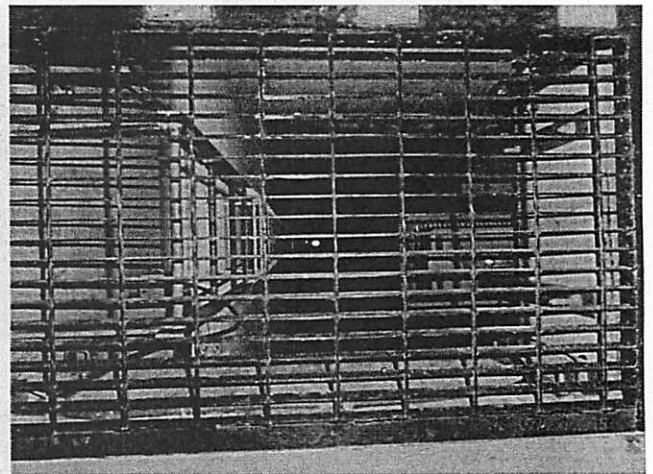
Photograph 17: Drain to sump



Photograph 18: Temperature and pressure gauges



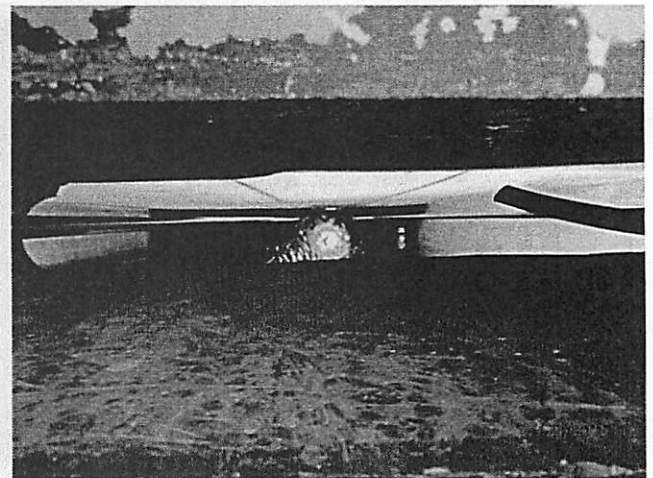
Photograph 19: Drain to sump



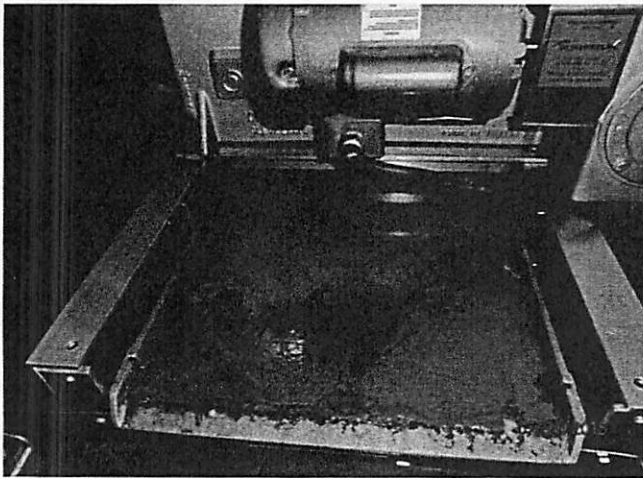
Photograph 20: Turbine 1-4 sump



Photograph 21: Sample tap for discharging sump water



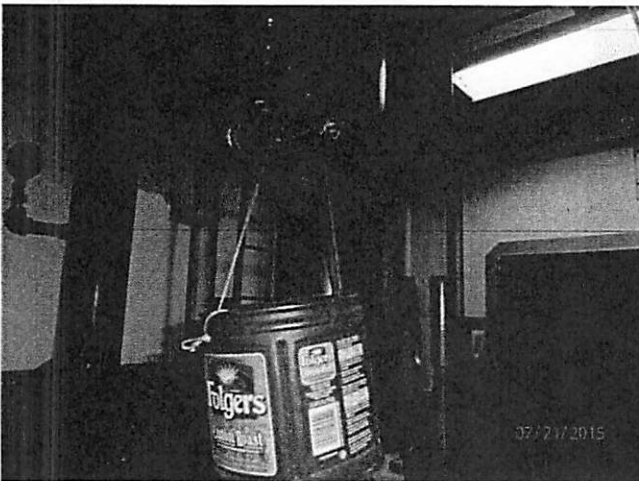
Photograph 22: Turbine 5 sump oil skimmer



Photograph 23: Turbine 5 oil skimmer



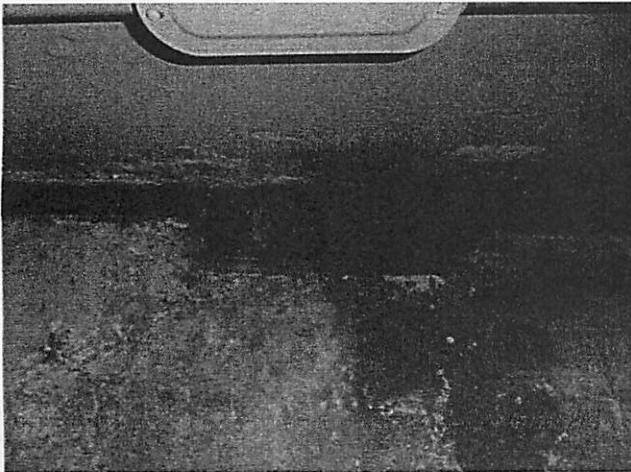
Photograph 24: Turbine 5 sump



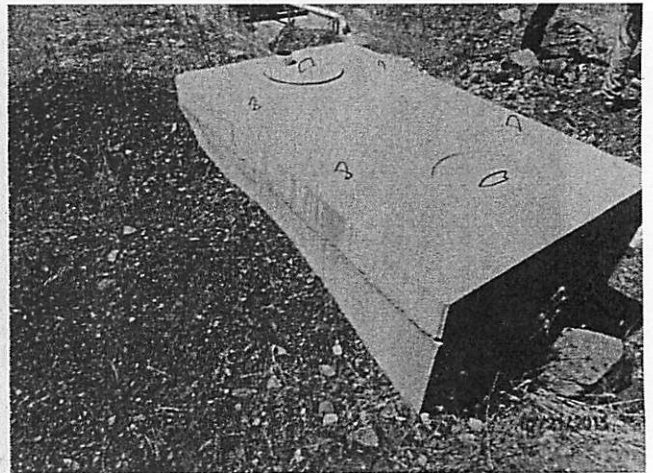
Photograph 25: Turbine 5 sump sample tap



Photograph 26: Trench for collecting nuisance water (typical)



Photograph 27: Trench drain



Photograph 28: New tank for onsite septic system



Photograph 29: Drain field looking west toward Oregon